

January 16, 2001

Sometimes when you need to find the area under a curve, you do not have the functional form of the curve, only a set of data points. Numerical integration is the only solution.

Simpson (m\_) and Trapezoid (m\_) are two functions that can compute the area in such circumstances. They both take a data matrix in the form:

$$\begin{array}{cc} x_0 & y_0 \\ x_1 & y_1 \\ \dots & \dots \\ x_n & y_n \end{array}$$

and compute the area under the curve defined by the points. **With these two functions, the spacing between  $x_{n+1}$  and  $x_n$  need not be uniform.** There must be an odd number of points (even number of intervals) for Simpson (m\_) to compute the area.

Don Phillips  
[PhillipsM@gao.gov](mailto:PhillipsM@gao.gov)